

definitions. When they faced the concrete problems of their science, however, it was found that these definitions contributed nothing to the solution. All that was found useful was *the measurements* of the entities so loquaciously defined."

The non-scientifically minded are apt to be dubious of such procedure. They ask, in effect, whether what is measured is really the concept which people have it in their minds to measure. To that the obvious reply is that, until the stage of exact definition and measurement is reached, there is no guarantee that different people, although they may use the same term to designate what they seek to measure, give to that term the same meaning. At the same time the student is warned not to assume that any measuring instrument used to measure a specific social relationship necessarily measures *all* the attributes associated with that relationship in common parlance.

As the author points out, measurement plays a critical rôle in every exact science. "The undeveloped state of technics and instruments for this purpose in the social sciences is unquestionably a major obstacle to efficient and economical research in these fields. The matter can perhaps be summarized most briefly by imagining what would be the state of knowledge, research and practical efficiency in the physical sciences if every researcher had to invent anew for each research project, instruments for the measurement of time, length, weight, temperature, etc. *The corresponding state of affairs is virtually what to-day exists in the social sciences.* There is no systematic theory which stipulates what we choose to regard as fundamental dimensions of social behaviour, and there are few standardized and verifiable definitions and measures of the various concepts and dimensions used by various researchers. Deliberate and co-ordinated work on this key problem might properly engage some of the attention of research foundations interested in fundamental research."

The importance of the subjects treated in this book to eugenics is evident. The chief aim of the eugenicist is to improve the quality of the population in physique, in health, in

mentality, in character, by encouraging the best endowed parents to produce children under the best conditions. We can assess physique by a combination of clinical and statistical observations, and gradually our instruments for estimating certain attributes associated with health, intelligence, and character are being improved; but there is clearly a long way yet to go before we can claim to be able to measure these fundamental qualities in man with any high degree of accuracy.

D. CARADOG JONES.

CRIMINOLOGY

East, W. Norwood. *The Adolescent Criminal: A Medico-Sociological Study of 4,000 Male Adolescents.* In collaboration with Percy Stocks and H. T. P. Young. London, 1942. J. and A. Churchill. Pp. xi+327. Price 45s.

DR. NORWOOD EAST has long been our foremost medical authority on the causes and treatment of criminal behaviour. Immense official experience gives weight to his opinions, and his psychiatric outlook has informed his writings with a broad and erudite conception of the ill-adjusted individual at odds with his environment. Many authorities would have been content, with so much experience at their command, to pronounce *ex cathedra* on the causes of crime and the wise management of criminals. Dr. East, however, has preferred to inquire closely, and with the best resources nowadays available, before accepting any common beliefs or advancing any new conclusions. This method was responsible for the outstanding report on the psychiatric treatment of criminals by Dr. East and Dr. W. H. de B. Hubert, and it has now led to the appearance of an extraordinarily valuable and thorough study of adolescent criminals. Four thousand lads, with homes in London and the surrounding areas, who had been referred from the Courts to Wormwood Scrubs Prison, were investigated by special visitors, the inquiry being designed not only to throw light on the

causes of adolescent criminality but also to ascertain whether the lads were suitable for Borstal and to amplify the medical officers' reports to the Courts, as well as to facilitate the allocation of the boys to the appropriate institution, if they were sentenced to Borstal detention. Much ancillary information was obtained from the police, the head master of the boys' school, his employers and others with intimate knowledge of various phases of his life. The data thus collected were vast, and the statistical analysis which was carried out by Dr. Percy Stocks is correspondingly detailed.

After some general consideration of the group studied, there is a lengthy chapter on "Hereditary and Familial Factors." Dr. East reviews the literature of the subject and concludes that most observers now hold the hereditary factor to be mainly potent in determining the probability that a given individual will commit a crime, whereas environmental influences decide what form the crime will take. The findings of familial incidence in this inquiry are classified as character disabilities: criminality, immorality and quarrelsomeness; mental disabilities; insanity and psychoneurosis; mental deficiency and subnormality; epilepsy; alcoholism; drug addiction; and physical diseases, particularly tuberculosis and other pulmonary disorders. It is not easy to draw inferences from the figures because, as Dr. East points out, there are no comparable data available for the average population. It is indeed this lack of normal data which constantly hampers the utilization of genetic and social material obtained by research into special populations. Dr. East has been able to compare boys with different types of offence: thus he finds that the boys charged with sexual offences had a higher incidence of insanity and of mental retardation or subnormality in their family than had boys with other crimes; the insanity was chiefly among the paternal relatives, and it would be informative to know whether the individual case records of the twelve criminal boys in question showed that the abnormality of their father had either included sexual perversion or manifestly

influenced the son's psychosexual development. A history of psychoneurosis was obtained in 2 per cent of all the families investigated; it is noteworthy, however, that a family history of quarrelsomeness was obtained in 3 per cent, and a similar incidence of immorality; it may be inferred that the figures for psychoneurosis are minimal. The percentage with a family history of insanity was 6.4: insanity is, of course, a more easily ascertainable datum than psychoneurosis.

The frequency of a criminal family history in those with a record of offences against the person or against discipline was lower than in the large group with a record of offences against property: this needs to be set alongside K. Ernst's findings among the offspring of those convicted of crimes of violence. An analysis of the types of crime among the relatives, especially the parents, in Dr. East's series would be informative.

In succeeding chapters the environmental factors at home, at school and at work are analysed, and the physical condition and diseases set forth. Goring's conclusion that all criminals, except those convicted of fraud, differ from the general population in stature and weight, was not confirmed in those adolescents. Dr. East points out that Goring's investigation was carried out before the passing of the Mental Deficiency Act, 1913, and that his subjects included feeble-minded persons who may have been below normal physical standards. In this series of 4,000 there were 135 mentally defective, and 18 others probably so, a much higher incidence than in the population of England and Wales as a whole. Insanity had been or was present in 0.9 per cent of the lads, and epilepsy occurred to the same degree. Mental retardation or subnormality, not amounting to deficiency, occurred in 14.7 per cent. Mental defect and subnormality were common among lads under 20 convicted of one or more sexual offences, occurring respectively in 20 per cent and 33 per cent of these offenders.

Personality traits, and judicial and administrative procedure are discussed in the concluding chapters.

It is impossible to give an abstract, or even an indication, of the wealth of material contained in this book, which is a landmark in British research in criminology. Dr. East pleads for further research and for the creation of a special penal institution which would be used as a centre for this purpose. There could not be a stronger argument to support his plea than the facts so fully set forth in the 112 tables of this book and in the lucid and well-weighed commentary which accompanies them.

AUBREY LEWIS.

BIOLOGY

Needham, Joseph, F.R.S. *Biochemistry and Morphogenesis*. Cambridge, 1942. University Press. Pp. xvi+787; 35 plates (4 in colour) and numerous illustrations in the text. Price 52s. 6d.

DR. JOSEPH NEEDHAM'S monumental work *Chemical Embryology* was published in 1931. Though the present book brings the older work up to date in many respects, it is by no means just a supplement to it. The author's encyclopædic knowledge of the literature has enabled him to cover an enormous field of experimental biology and biochemistry, to take up threads seemingly far apart and to knit them together into a multi-coloured and absorbingly interesting fabric. In these days of increasing specialization one cannot be too grateful for a synthetic work of this kind, and author and publishers are to be congratulated for its production at the present time.

Geneticists will be particularly interested in Dr. Needham's discussion of genes and organizer phenomena. In this borderline subject between chemistry and morphology great advances in our understanding of gene action and "character" may be anticipated in the future. Indeed, it requires little pro-

phetic foresight to predict that this will be one of the main lines along which genetics, in collaboration with biochemistry, will advance during the next decade, and it is for this reason that geneticists would be well advised to familiarize themselves with Dr. Needham's clear and thoughtful exposition of the subject.

It is, of course, quite unavoidable that a few errors should have found their way into a book of this magnitude and covering so wide a field. In pointing out two or three from his own limited field, the reviewer wants to make it quite clear that these slips are mostly trivial and in no way detract from the value of this work. The gene for "dominant spotting" with anæmia in the mouse was first recognized by Miss Durham in 1908, not by Little (1915), and the hæmoglobin content of the red cells is not normal, but increased, as the cells are larger than normal, though they are greatly reduced in number (p. 378). The gene "hooded-lethal" described by Crew and Kon occurred in the rat, not the mouse (p. 391). The lethal head and jaw anomaly of mice described by Little and Bagg in 1924 is distinct from the gene for myelencephalic blebs obtained by the same authors (p. 372). On p. 366 it is stated that "lethal genes are always harmless in the heterozygous condition." While this is certainly true in the majority of cases, there are some exceptions; for instance, the gene Sd (Danforth's short-tail) in the mouse, which is completely lethal in the homozygous condition (absence of kidneys, etc.), also kills about 70 per cent of the heterozygotes by a less complete reduction of the kidneys; of course such a gene would rapidly die out outside a laboratory.

However, these are but details, which matter little. Dr. Needham's work is a most distinguished contribution to the theory of organic development and deserves a wide circulation.

H. GRÜNEBERG.